**Notebook Series -- Notebooks by Edison**
**Notebook, N-12-02-00**

This undated notebook was probably used by Edison in October 1914. Some of the entries are continuations of experiments in N-14-12-03. Others overlap with work in N-14-10-10.1 or fill in missing experiment numbers from that book. The notes pertain to experiments aimed at the rejuvenation or "regeneration" of used storage batteries. Included are the results of tests performed on cells constructed with various regenerated components. Some entries involve the use of regenerated negative electrode "pockets," while others relate to regenerated positive electrode "tubes." The experiments bear numbers from 231 to 403, but not all numbers in the sequence are represented and the entries are not always recorded in numerical order. The front cover is labeled "Data Cell Regeneration Cadmium etc. Important." The front flyleaf is inscribed "Regeneration #3," indicating a connection to N-14-10-10.1. The pages are unnumbered. Approximately 55 pages have been used.

Acme Co.

MFG. STATIONERS,
95 JOHN ST.
AND
19 PLATT ST.
NEW YORK.

Reparation #3

2 A4 Cells - green soaked Conc CoCl hot, dried. then KOH, Then loaded in Tubes.

Its Capacity - cold 35° normal, high rate dischg or hot no better in fact worse than Regular's - See Book #2

Bad irons if iron taken out + powdered thru 150 mesh + put in new pockets is nearly as good as new iron if 1/4 of new iron is mixed with it is practically good as new, But from tests should say it was best to remove from pockets break up to 1/4 mesh soak all night in 3% $SO_2$ acid, wash out dry & then powder thru 150 mesh add 1/4 part of new iron & use it could be OK

Ferrous Ammonia Sulphate iron is no better than Reg iron either at normal or cold test.

20% Glauncus Ox mixed with Reg
Fe with 6% Hg gives very high
Capacity normal - Very poor on Cold
35° Fahr gives for for 5 grms of
Mix (4 grms Fe) 3200 MAH —
7 grms 3900 MAH + Single tubes
Dont think any gain in using it.

Tin itself used in place of Fe
Tin reduced by H 5 grm Cake
gives

| | |
|---|---|
| 1 | 65 |
| 2 | 250 |
| 3 | 730 |
| 4 | 1050 |
| 5 | 1165 |
| 6 | 630 |
| 7 | 275 |
| 8 | 645 |
| 9 | 140 |
| 10 | 920 |
| 11 | 255 |
| 12 | 60 |
| 13 | 15 |
| 14 | 155 |
| 15 | 20 |
| 16 | 70 |

Curious —

Needs explaining

72 - Single 72 plate
produced in disc lake
att #4

333X

| | | |
|---|---|---|
| 47 | 30.67 | 30.81 |
| 52 | 30.38 | 31.24 |

Single Qz plate pressed 1st with Convex die, then Ott #4

334X

| | | |
|---|---|---|
| 47 | 26.25 | 28.63 |
| 52 | 26.25 | 28.13 |

335X

single iron plate B
pressed flat with Ott #4
then flat die

| | | |
|---|---|---|
| 47 | 30.43 | 30.62 |
| 52 | 30.69 | 30.77 |

336 X Dwgle B wrongplate pressed 1st by Off #4 then reg Corrugating die —

| | | |
|---|---|---|
| 47 | 30.75 | 30.00 |
| 52 | 31.13 | 30.64 |

Pressed Ott #4 Edges only

333

| | | | |
|---|---|---|---|
| 116 | 2627 | 2600 | |
| 122 | 2050 | 2050 | At high rate |

334

Proceed more with old Connection first, then compared with Ell # 4

| | | | |
|---|---|---|---|
| 116 | 2727 | 2487 | |
| 122 | 1887 | 1787 | at high rate |

335

Pressed with Ott 4 first Ukein
with flat die

| | | |
|---|---|---|
| 93 | 2567 | 2507 |

8 grms pressed all 4 them
Corrugated w old reg die -

336

| | | |
|---|---|---|
| 93 | 2747 | 2687 |

349 Ferrous Ann Seal Fa -

| | | | | |
|---|---|---|---|---|
| Special Off 2 Die | 87 | 1226 | 1666 | 800 mil amp dischg rate |
| " 4 Die | " | 1666 | 1306 | " " |
| Reg Off 2 | " | 1706 | 1696 | " " |
| " " 4 | " | 1320 | 1454 | " " |
| Spl 2 | 92 | 1146 | 1680 | " " |
| " 4 | " | 1786 | 1306 | " " |
| Reg 2 | " | 1826 | 1906 | " " |
| " 4 | " | 1426 | 1454 | " " |

Ott 4 die 7z 3011 mif 2109

353

| | IV | ½ | IV | ½ |
|---|---|---|---|---|
| 67 | 212.5 | 224 | 211.5 | 220.7 |
| 73 | 213 | 224 | 209.5 | 220 |

354

Jms 2109 7z 3011-
Reg Corrugtg die - a
Check on 353

| | 1V | ½V | 1V | ½V |
|---|---|---|---|---|
| 67 | 211.5 | 221.7 | 210 | 221 |
| 73 | 211 | 222.5 | 208.5 | 222 |

352 Submarine Type plate 0 to 4 - these 2 cells are B 4 - Cellier will get more pressure than it should as product thicker than reg Sub ~~[illegible]~~ - type die was made too

| | 1 V | ½ V | 1 V | ½ V |
|---|---|---|---|---|
| 59 | 101.2 | 108.7 | 101 | 110 |
| 64 | 101.7 | 109.2 | 101.7 | 109.7 |

355

2 - B4 #4 Old die - Edge Crimp

| | 1 V | ½ V | 1 V | ½ V |
|---|---|---|---|---|
| 59 | 102 | 109.7 | 102 | 109.5 |
| 64 | 104.2 | 111.2 | 104.5 | 111.5 |

358 20% Tin Ox 6% Hg-Ctl # 8 grams

| | 1V | .9V | ½V | 1V | .9V | ½V | |
|---|---|---|---|---|---|---|---|
| 68 | 63.2 | 171.7 | 210 | 58.2 | 171.7 | 213.2 | Highrate |
| 74 | 75 | 164.2 | 209.2 | 66.7 | 163.2 | 211.7 | " |

359

Neg plate 129 processed A4 allo + corrugated 8 gm for comparison with 360 + 361 E

| | 1 V | 1/2 V | 1 V | 1/2 V |
|---|---|---|---|---|
| 67 | 197.5 | 216.5 | 195 | 214 |
| 71 | 200.2 | 218.5 | 197.7 | 213.2 |

A4- present in Oct 4 — 8 grams

| | 360 | | | |
|---|---|---|---|---|
| | 1V | 1/2V | 1V | 1/2V |
| 67 | 195 | 211 | 197 | 214.5 |
| 71 | 197 | 212 | 200.2 | 216 |

Ag neg plates - 7 grms - pressed in Oct 4

361

| | | | | |
|---|---|---|---|---|
| 67 | 195 | 216 | 199 | 218 |
| 71 | 200 | 217 | 200.5 | 219.2 |

3 ways of forming

365 Same as 362 E Cut off but formed at 800 rate + run normal

| | | | |
|---|---|---|---|
| 53 | 2560 | 2420 | normal- |
| 59 | 1837 | 1875 | High rate |

366E

| | A | | B | | C | | D | | E | | 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1V | 1/2 | 1V | 1/2 | 1V | 1/2 | 1V | 1/2 V | 1V | 1/2 | 1V | 1/2 |
| 49 | 199 | 212 | 195 | 213 | 197.5 | 219 | 197.2 | 211 | 198.5 | 211 | 199 | 211.5 |
| 53 | 200.7 | 213.5 | 201 | 213.7 | 200.2 | 219.7 | 200 | 214.2 | 198.2 | 209.2 | 200.5 | 213 |

6 A4 Cells - 9 grm pkts pressed 160 Tons now off # 4 afterwards pressed with flat die 120 Tons Cells reversed to distribute LiOH.

| | 367 A | | B | | C | | D | |
|---|---|---|---|---|---|---|---|---|
| | 1 V | 1/2 | 1 V | 1/2 | 1 V | 1/2 | 1 V | 1/2 |
| 42 | 102.2 | 114 | 104.2 | 116 | 103.7 | 116.5 | 107.7 | 125.5 |
| 47 | 108 | 116.2 | 107.5 | 116 | 107.5 | 116 | 111.7 | 121 |

| E | | F | |
|---|---|---|---|
| 1 V | 1/2 | 1 V | 1/2 |
| 100.5 | 108.5 | 99.7 | 107.7 |
| 102.7 | 111.7 | 100.5 | 112 |

B4s – 5.3 grms 72
Ott 4 80 Tons
AB formed Normal Temp
CD – " 130 Fahr
EF " 35° deg Fahr

378

7 grm pkt 300 almos
Checker die

| | | | |
|---|---|---|---|
| 48 | 2027 | 2227 | Normal |
| 54 | 1225 | 1387 | High rate |

379

7 gm Pkt 200 almos

| | | | |
|---|---|---|---|
| 48 | 2567 | 2453 | normal |
| 54 | 1725 | 1662 | High rate |

380 7 gram pkt 125 almas —

| | | | |
|---|---|---|---|
| 48 | 2520 | 2380 | Normal |
| 54 | 1787 | 1500 | High rate |

240 Cobalt Cells - 120 Tubes

| | 1U | .9V | 1U | .9V |
|---|---|---|---|---|
| 120 | 189.5 | 199.7 | 187.5 | 199.7 |
| 125 | 194.7 | 207.5 | 192.7 | 203.5 |

Bismuth 351E

| | 1V | .9V |
|---|---|---|
| 221 | 197.5 | 201.7 |
| 226 | 201.7 | 205 |

371 B4 - Brown the Cello H. Oak (Wed)

| | 1V | .9V | 1V | .9V | 1V | .9V |
|---|---|---|---|---|---|---|
| 53 | 89.5 | 92.2 | 81 | 83.8 | 86.2 | 89.5 |
| 58 | 91.7 | 93 | 82.5 | 85 | 87 | 91 |

372 Reg green soaked Conc KCl + dried & left in porcs to back up green

| | | |
|---|---|---|
| 46 | 1217 | 1257 |
| 52 | 1217 | 1266 |

373 Green soaked KClorate left in

| | | |
|---|---|---|
| 46 | 1343 | 1290 |
| 52 | 1333 | 1290 |

374

Green soaked K Nitrate left in

| | | |
|---|---|---|
| 46 | 1323 | 1220 |
| 52 | 1323 | 1223 |

375 - Green soaked K Sulphate + left in -

| | | |
|---|---|---|
| 46 | 1300 | 1183 |
| 52 | 1303 | 1197 |

376 Green soaked K Bromide left in -

| | | |
|---|---|---|
| 46 | 1297 | 1307 |
| 52 | 1297 | 1307 |

377 Green soaked K Carbonate left in

| | | |
|---|---|---|
| 46 | 1273 | 1283 |
| 52 | 1273 | 1280 |

7 gram pocket
Fer Amon Sul Fe 20% Stannous Ox

344

20% SnO - 6% Hg 7 grams
Ferrous Amm Sul 7 gr -

Heat Capacity

| | | | | | |
|---|---|---|---|---|---|
| 66 | 2675 | 2560 | 2075 | 2100 | Just had 10 hot runs |
| 67 | 2910 | 3000 | | | |
| 75 | 395 | 2560 | | | |

| | 385 | | 386 | | 387 | | 388 | |
|---|---|---|---|---|---|---|---|---|
| 1 | 2533 | 2367 | 2433 | 2487 | 2220 | 2333 | 2153 | 2367 |
| 2 | 2047 | 1980 | 1873 | 2033 | 1840 | 1933 | 1767 | 1707 |
| 4 | 947 | 1060 | 947 | 1007 | 787 | 1547 | 900 | 913 |
| 5 | 1107 | 1160 | 1047 | 1060 | 887 | 1340 | 1080 | 1080 |

| | 389 | | 390 | | 391 | | 392 | | over |
|---|---|---|---|---|---|---|---|---|---|
| | 2440 | 2447 | 2453 | 2507 | 2453 | 2213 | 2460 | 2460 | |
| | 2073 | 2033 | 2047 | 2073 | 1893 | 1787 | 2060 | 2060 | |
| | 953 | 1533 | 27 | 887 | 773 | 807 | 920 | 860 | 350 7ahr |
| | 1247 | 1313 | 167 | 1180 | 340 | 1053 | 1067 | 920 | |

393

| | | | |
|---|---|---|---|
| 1 | 2460 | 2460 | |
| 2 | 2053 | 2073 | |
| 4 | 920 | 1047 | 35° Fahr |
| 5 | 920 | 1187 | " " |

Brun normal
10 " at high rate
20 " "
750 ma per pocket, 30 " "
40 " "
50 " "

| | Reg Cells | | | | Burn ground from ribbons of iron pockets | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1V | 1/2 | 1V | 1/2 | 1V | 1/2 | 1V | 1/2 | |
| 14 | 195 | 207 | 195 | 208 | 195 | 207.5 | 192 | 205.5 | 3rd normal |
| 24 | 162 | 208 | 160 | 205 | 160 | 205 | 160 | 202 | |
| 34 | 168 | 219 | 170 | 218 | 171.5 | 216.5 | 170 | 211.5 | |
| 44 | 170 | 218 | 165 | 215 | 170 | 213 | 165 | 210 | |
| 54 | 170 | 219 | 168.5 | 217 | 175 | 215 | 170 | 213 | |
| 64 | 168 | 218.5 | 170 | 218 | 167.5 | 211 | 164 | 208 | |

381 Regular to Compare

| | 1 V | 1/2 | 1 V | 1/2 |
|---|---|---|---|---|
| 66 | 170 | 217 | 170 | 213 |

381X Burograundoff

| | | | | |
|---|---|---|---|---|
| 66 | 173.5 | 213 | 170 | 207.5 |

231

| Run | | |
|---|---|---|
| 225 | 1083 | 1077 |

368 about liter soaked 24 hours
Conc 1.04. then put in 21 K 21;
+ put right on chg — ½ pressure 4 4

| | | |
|---|---|---|
| 72 | 1307 | 1323 |

400

| | | |
|---|---|---|
| 1 | 525 | 650 |
| 2 | 650 | 760 |

401

| | | |
|---|---|---|
| 1 | 1335 | 1290 |
| 2 | 835 | 835 |

402E Cadmium No Mercury
Reduced by H from Oxide - To
Serum as an Iron 35 Fahr

403 Cadmium by H for O &
4% Hgin - Run 350 Fahr